Breeding biology of the Grey-breasted Flycatcher *Lathrotriccus griseipectus* in south-west Ecuador

by Harold F. Greeney

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Summary.—I studied two nests of Grey-breasted Flycatcher *Lathrotriccus griseipectus* in seasonally deciduous dry forest in south-west Ecuador. Nests were open cups constructed in natural depressions, one in the buttress of a large tree and one in a clump of bromeliads. Construction of one nest was completed in five days. Clutch size was two at one nest, and the eggs were pale beige with sparse, red-brown blotching. Eggs at both nests were laid 48 hours apart, and at one nest both eggs hatched 16 days after clutch completion. One nest was depredated immediately after the second egg was laid, but both nestlings fledged after 14 days at the other. Only one adult incubated, but both provisioned nestlings. The species' breeding biology is similar in all respects to that of the congeneric Euler's Flycatcher *L. euleri*, as well as to members of the closely related genus *Empidonax* of temperate and subtropical America.

Grey-breasted Flycatcher *Lathrotriccus griseipectus* is a monotypic species restricted to the Tumbesian region of western Ecuador and Peru (Fitzpatrick 2004). Within its small range, the species is generally uncommon and has apparently declined in recent years, consequently Birdlife International (2013) treat it as Vulnerable. The species' only congeneric, Euler's Flycatcher *L. euleri*, is comparatively widespread and its breeding biology well known (Allen 1893, Euler 1900, Belcher & Smooker 1937, Aguilar *et al.* 1999, Aguilar & Marini 2007, Marini *et al.* 2007). The breeding biology of *L. griseipectus*, however, is wholly unknown. Here I describe the species' nest, eggs and nestlings from south-west Ecuador.

Methods and Results

I studied two nests of *L. griseipectus* at the Jorupe Reserve (Jocotoco Foundation), near Macará, Loja province, south-west Ecuador (04°23'S, 79°57'W; 600 m). Jorupe encompasses tropical deciduous forest typical of the Tumbesian bioregion (Best & Kessler 1995) and protects several other range-restricted species that have only recently had their breeding biology described (Miller *et al.* 2007, Rheindt 2008, Gelis *et al.* 2009). I took linear measurements of eggs to the nearest 0.1 mm and weighed them periodically during incubation using an electronic balance sensitive to 0.001 g. Eggs were individually marked using a permanent marker. I equate loss of mass during incubation with loss of water from the embryo (Ar & Rahn 1980). I made nest measurements to the nearest 0.5 cm. I collected nests after fledging or abandonment and let them dry *ex-situ* for two weeks before taking them apart and weighing their components to the nearest 0.001 g.

On 10 February 2010 I discovered the first nest (Fig. 1) at 18.00 h. It was empty and no adults were nearby. When I returned next day at 14.00 h, it contained a single egg, which was dry and cool to the touch. I returned six times during the afternoon but I did not observe an adult and the egg was cold and unattended until after dark. Next morning, pre-dawn, the egg was still cold, indicating that an adult had not spent the night at the nest. During seven visits on 12 February I encountered an adult only twice, suggesting that little time

was devoted to incubation that day. The nest still held a single egg at 18.00 h and next morning at 05.00 h the egg was cold, again indicating that no adult had spent the night at the nest. When I returned that afternoon the second egg had been laid. I checked the nest contents daily until, on 1 March at 10.45 h, I discovered that the first egg to have been laid was hatching. The second hatched a few hours later. These observations indicate an incubation period of 16 days from the laying of the second egg until hatching of both eggs. Both nestlings left the nest at *c.*11.00 h on 15 March, giving a nestling period of 14 days.

I found the second nest on 16 February at 08.00 h, when I flushed an adult from a natural indentation at the base of a bromeliad (see below). On closer inspection I was unable to detect a nest, but 3–4 dead leaves inside the depression had possibly been brought by the adult. By the morning of 18 February, however, the nest cup was well formed and a few rootlets had been added to the lining. The first egg was laid on the morning of 20 February, giving a building period of no more than five days. The nest still contained one egg at 18.00 h on 21 February and the second egg was laid between 06.15 and 10.00 h on 22 February. On 23 February, however, the nest was empty at 16.15 h. Both adults were still present and swooped close to me while bill snapping. There were no signs of eggshells and the nest was undamaged.

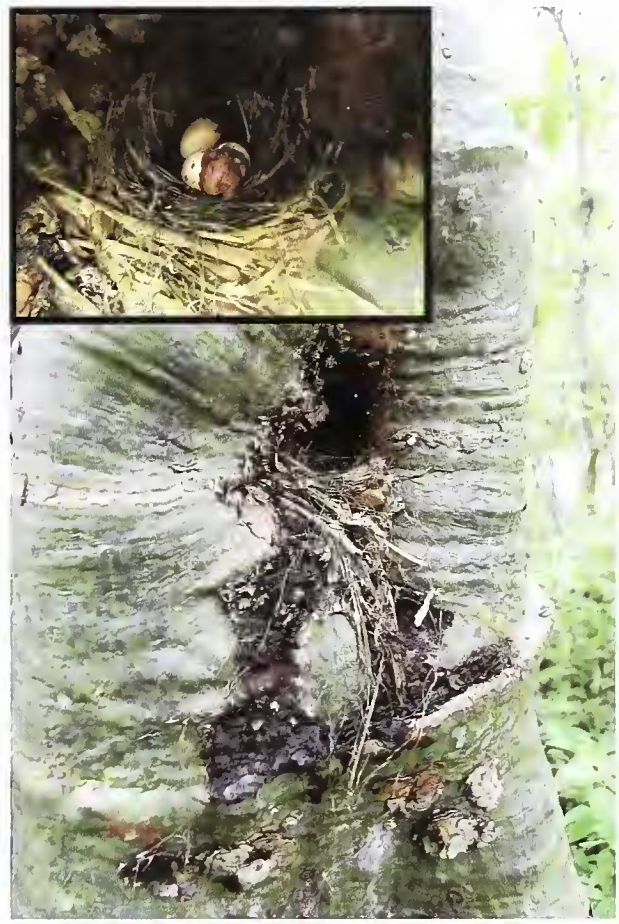

Figure 1. Position of nest 1 of Grey-breasted Flycatcher *Lathrotriccus griseipectus* in a shallow cavity on a tree root, with inset showing a detail of the nest, Jorupe Reserve, Loja province, Ecuador (Harold F. Greeney)

Both nests were open cups composed externally of dead leaves and bark, with a relatively sparse inner lining of fungal rhizomorphs, dark rootlets and pale grass stems and fibres. Mean (± SD) total dry weight of both nests was 7.2 ± 1.9 g. The relative contribution of materials is presented in Table 1. The first nest (Fig. 1) was placed 1 m above ground in a shallow, upward-opening cavity in the buttress root of a canopy-emergent *Ceiba* tree. The cavity was longer than it was wide, and the nest completely filled it. The second nest (Fig.

TABLE 1
Dry weight (g) of materials comprising the nests of two Grey-breasted Flycatchers *Lathrotriccus griseipectus* in south-west Ecuador.

	flexible bark strips	stiff bark chips	total bark	dead leaves	fungal rhizomorphs	dark rootlets	thin stems	Total
Nest 1	0.295	1.752	2.047	0.549	1.289	0.527	0.111	4.523
Nest 2	3.693	3.064	6.757	1.380	0.521	0.703	0.518	9.879
Mean	1.994	2.408	4.402	0.965	0.905	0.615	0.315	7.201
SD	1.201	0.464	3.330	0.294	0.272	0.062	0.144	1.894
% of total	27.7	33.4	61.1	13.4	12.6	8.5	4.4	

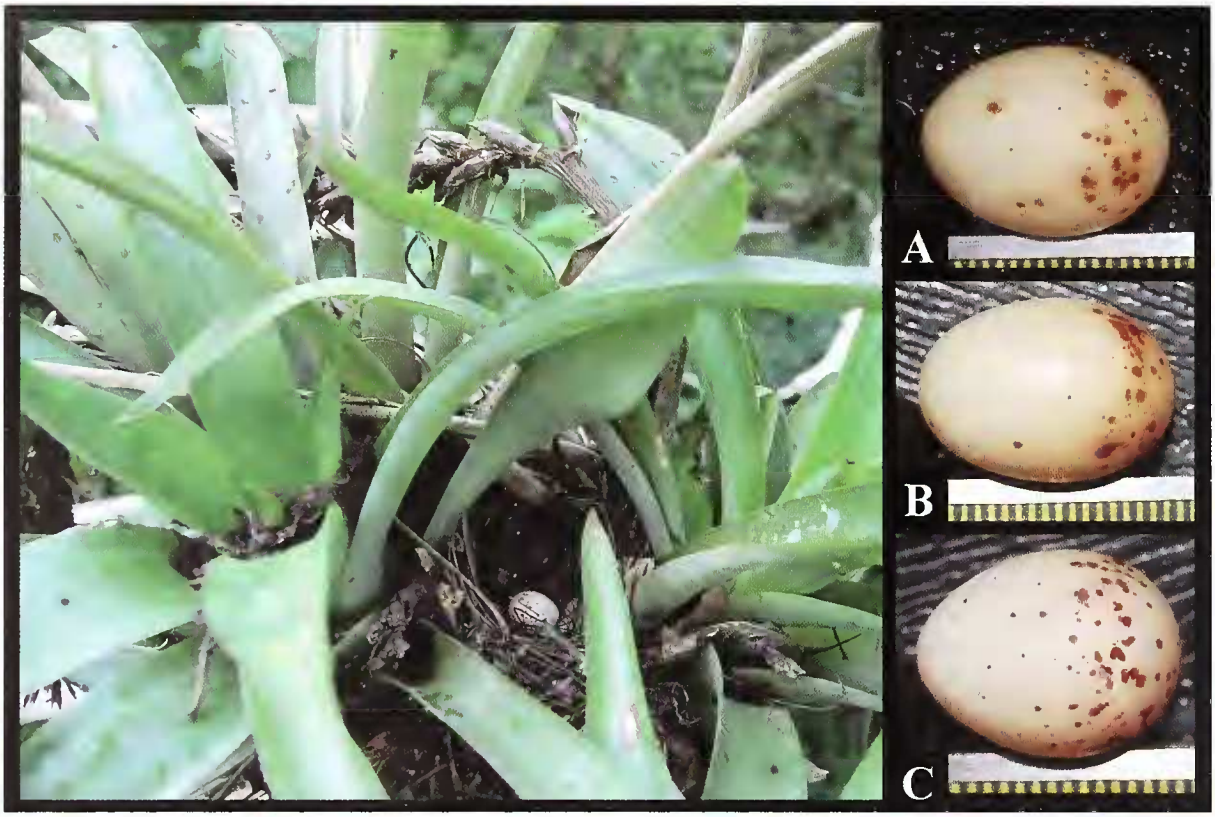

Figure 2. Position of nest 2 of Grey-breasted Flycatcher *Lathrotriccus griseipectus* in a depression amongst epiphytic bromeliads, with inset showing three eggs from two separate clutches, Jorupe Reserve, Loja province, Ecuador (Harold F. Greeney)

Figure 3. Nestlings of Grey-breasted Flycatcher *Lathrotriccus griseipectus*: upper row two days after hatching, and lower row nine days after hatching, Jorupe Reserve, Loja province, Ecuador (Harold F. Greeney)

2) was 4 m above ground, filling a slightly oblong hollow between the leaf bases of two bromeliads in a suspended clump of epiphytes. The external shape of the nests was oblong, fitting their respective cavities. The egg cups, however, were almost circular. Mean (cm ± SD) measurements were: greatest external diameter, 8.3 ± 0.4; smallest external diameter, 5.5 ± 0.7; external height, 5.3 ± 0.4; internal diameter, 4.8 ± 0.4; internal depth, 3.3 ± 0.4. Post-

fledging, the internal cup of the first nest was slightly stretched and the internal diameter (measured at perpendicular angles) was 6 × 5 cm.

All four eggs had a pale beige ground colour with sparse cinnamon and orange-brown spotting, heaviest near the larger end (Fig. 2). Mean (± SD) size of three eggs was 18.0 ± 1.4 × 13.5 ± 0.5 mm. Mean fresh weight of these eggs was 1.76 ± 0.27 g, all measured on the day they were laid. During incubation the two eggs at the first nest lost mass at a mean rate of 0.9 ± 0.1% / day of their original mass (range = 0.8–1.0% / day).

I was unable to obtain linear measurements or weights of the nestlings but here provide a qualitative description. On hatching, nestlings bore a dorsal covering of pale brown natal down, which was paler at the base of the plumes and even paler posteriorly, affording them a camouflaged, sun-dappled appearance. Their skin was dusky, pinker ventrally and their legs yellowish. Their bills were similar in coloration to their legs and bore contrasting, bright yellow-white rictal flanges. The mouth lining, throughout the nestling period, was bright yellow-orange. Two days after hatching their appearance had changed little. By nine days of age, however, the nestlings were well feathered, with only sparse tufts of natal down remaining (Fig. 3).

Adults were extremely wary around the nests, generally flushing when approached to within 10 m, disappearing silently into the nearest dense vegetation. Using a tripod-mounted video camera I was able to ascertain that only one adult (presumably the female as in other tyrannids: Fitzpatrick 2004) incubated. However, both sexes provisioned the young.

Discussion

Unsurprisingly, all aspects of the biology of *L. griseipectus* described here are similar to those of *L. euleri* (Aguilar *et al.* 1999, Aguilar & Marini 2007, Marini *et al.* 2007). In fact, the nest and eggs of *L. euleri* photographed by Buzzetti & Silva (2008) are extremely similar in colour, placement and construction to one of the two nests described here. While a sample size of two nests precludes any firm comparisons, it appears that *L. griseipectus* may lay fewer eggs than *L. euleri*, which is usually reported as having a modal clutch size of three (Aguilar *et al.* 1999, Auer *et al.* 2007). The incubation and nestling periods documented here at a single nest of *L. griseipectus* are both *c.*1 day shorter than mean durations reported for *L. euleri* (Aguilar *et al.* 1999, Auer *et al.* 2007). Both species of *Lathrotriccus* are also similar in their breeding habits to members of the closely related genus *Empidonax* of temperate regions (Lanyon 1986, Cicero & Johnson 2002), within which they have been placed in the past (Cory & Hellmayr 1927, Traylor 1979). Among other aspects, both genera share similar, cream-coloured or pale white, lightly spotted eggs, and well-constructed open-cup nests using a variety of substrates, but seemingly preferring well-supported sites such as ledges, thick branches, branch forks and even man-made structures (Russell & Woodbury 1941, King 1955, Walkinshaw & Henry 1957, Bowers & Dunning 1994, Briskie 1994, Wilson & Cooper 1998, Lowther 2000, Dobbs 2005).

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Address: Yanayacu Biological Station & Center for Creative Studies, c/o Foch 721 y Amazonas, Quito, Ecuador, e-mail: revmmoss@yahoo.com